

CLAIMS

WHAT IS CLAIMED IS:

1. A method of conducting data compression, comprising:
receiving multiple input data blocks for storage in a data storage subsystem;
applying a predetermined compression process to the data blocks;
evaluating application of the predetermined compression process according to
a predetermined compression criteria; and
if the compression fails to satisfy the predetermined compression criteria,
ceasing application of the predetermined compression process.
2. The method of claim 1, the predetermined compression process being
performed individually to each of the received data blocks, the evaluating of
application of the predetermined compression process according to a predetermined
compression criteria comprising:
selecting a group of the received data blocks in accordance with a
predetermined selection criteria;
for each data block in the selected group, determining a compression ratio
between (1) the data block's size after application of the predetermined
compression process, and (2) the data block's size prior to application
of the predetermined compression process, and
for the selected group of received data blocks, determining how many data
blocks have a compression ratio greater than a first threshold; and
if the number of data blocks having a compression ratio greater than the first
threshold exceeds a second threshold, the compression satisfying the
predetermined compression criteria.

1 3. The method of claim 2, the selection of a group of the received data blocks in
2 accordance with a predetermined selection criteria comprising selection of data blocks
3 in a fixed window.

1 4. The method of claim 2, the selection of a group of the received data blocks in
2 accordance with a predetermined selection criteria comprising selection of data blocks
3 in a running window.

1 5. The method of claim 1, the evaluating of application of the predetermined
2 compression process according to a predetermined compression criteria comprising:
3 selecting a group of received data blocks in accordance with a predetermined
4 selection criteria;
5 for all received data blocks in the selected group, determining an aggregate
6 compression ratio between (1) the aggregate size of the data blocks
7 after application of the predetermined compression process, and (2) the
8 aggregate size of the data blocks prior to application of the
9 predetermined compression process, and
10 determining whether the aggregate compression ratio exceeds a first threshold;
11 and
12 if the aggregate compression ratio exceeds the first threshold, the compression
13 satisfying the predetermined compression criteria.

1 6. The method of claim 5, the selection of a group of the received data blocks in
2 accordance with a predetermined selection criteria comprising selection of data blocks
3 in a fixed window.

1 7. The method of claim 5, the selection of a group of the received data blocks in
2 accordance with a predetermined selection criteria comprising selection of data blocks
3 in a running window.

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2 *Sub B2*
3 8. The method of claim 1, wherein:
4 the predetermined compression process is performed individually to each of
5 the received data blocks; and
6 the cessation of application of the predetermined compression process
7 comprises ceasing application of the predetermined compression
process until satisfaction of a predetermined skip criteria, and then
resuming application of the predetermined compression process.

1 9. The method of claim 8, predetermined skip criteria comprising expiration of
2 predetermined time. *CE*

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2 *Sub B3*
3 10. The method of claim 9, the cessation of application of the predetermined
4 compression process further comprising:
5 storing data items received during cessation of the predetermined compression
6 process without compression according to the predetermined
7 compression process.

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1 12. A programmed product comprising signal-bearing media tangibly embodying
2 a program of machine-readable instructions executable by a digital processing
3 apparatus to perform a method for conducting data compression, said method
4 comprising:

5 receiving multiple input data blocks for storage in a data storage subsystem;
6 applying a predetermined compression process to the data blocks;
7 evaluating application of the predetermined compression process according to
8 a predetermined compression criteria; and
9 if the compression fails to satisfy the predetermined compression criteria,
10 ceasing application of the predetermined compression process.

11 13. The product of claim 12, the predetermined compression process being
12 performed individually to each of the received data blocks, the evaluating of
13 application of the predetermined compression process according to a predetermined
14 compression criteria comprising:

15 selecting a group of the received data blocks in accordance with a
predetermined selection criteria;
for each data blocks in the selected group, determining a compression ratio
between (1) the data block's size after application of the predetermined
compression process, and (2) the data block's size prior to application
of the predetermined compression process, and
for the selected group of received data blocks, determining how many data
blocks have a compression ratio greater than a first threshold; and
if the number of data blocks having a compression ratio greater than the first
threshold exceeds a second threshold, the compression satisfying the
predetermined compression criteria.

1 14. The product of claim 13, the selection of a group of the received data blocks
2 in accordance with a predetermined selection criteria comprising selection of data
3 blocks in a fixed window.

1 15. The product of claim 13, the selection of a group of the received data blocks
2 in accordance with a predetermined selection criteria comprises selection of data
3 blocks in a running window.

1 16. The product of claim 12, the evaluating of application of the predetermined
2 compression process according to a predetermined compression criteria comprising:
3 selecting a group of received data blocks in accordance with a predetermined
4 selection criteria;
5 for all received data blocks in the selected group, determining an aggregate
6 compression ratio between (1) the aggregate size of the data blocks
7 after application of the predetermined compression process, and (2) the
8 aggregate size of the data blocks prior to application of the
9 predetermined compression process, and
10 determining whether the aggregate compression ratio exceeds a first threshold;
11 and
12 if the aggregate compression ratio exceeds the first threshold, the compression
13 satisfying the predetermined compression criteria.

1 17. The product of claim 16, the selection of a group of the received data blocks
2 in accordance with a predetermined selection criteria comprising selection of data
3 blocks in a fixed window.

1 18. The product of claim 16, the selection of a group of the received data blocks
2 in accordance with a predetermined selection criteria comprising selection of data
3 blocks in a running window.

1 19. The product of claim 12, wherein:
2 the predetermined compression process is performed individually to each of
3 the received data blocks; and
4 the cessation of application of the predetermined compression process
5 comprises ceasing application of the predetermined compression
6 process until satisfaction of a predetermined skip criteria, and then
7 resuming application of the predetermined compression process.

1 020. The product of claim 19, predetermined skip criteria comprising expiration of
2 a predetermined time.

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21. The product of claim 20, the termination of application of the predetermined
compression process further comprising:

storing data items received during cessation of the predetermined compression
process without compression according to the predetermined
compression process.

22. The product of claim 20, the resumption of application of the predetermined
compression process after satisfaction of a predetermined skip criteria comprising:

resuming application of the predetermined compression process after storage
of a predetermined number of data items without compression
according to the predetermined compression process.

1 23. A data storage subsystem, comprising:
2 a storage unit to store digital data blocks;
3 a storage controller, coupled to the storage unit, and programmed to conduct
4 a data compression process, the process comprising:
5 receiving multiple input data blocks for storage in a data storage
6 subsystem;
7 applying a predetermined compression process to the data blocks;
8 evaluating application of the predetermined compression process
9 according to a predetermined compression criteria; and
10 if the compression fails to satisfy the predetermined compression
11 criteria, ceasing application of the predetermined compression
12 process.

13 24. The subsystem of claim 23, the predetermined compression process being
14 performed individually to each of the received data blocks, the evaluating of
15 application of the predetermined compression process according to a predetermined
compression criteria comprising:

selecting a group of the received data blocks in accordance with a
predetermined selection criteria;

for each data blocks in the select group, determining a compression ratio
between (1) the data block's size after application of the predetermined
compression process, and (2) the data block's size prior to application
of the predetermined compression process, and

for the selected group of received data blocks, determining how many data
blocks have a compression ratio greater than a first threshold; and
if the number of data blocks having a compression ratio greater than the first
threshold exceeds a second threshold, the compression satisfying the
predetermined compression criteria.

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1 25. The subsystem of claim 24, the selection of a group of the received data blocks
2 in accordance with a predetermined selection criteria comprising selection of data
3 blocks in a fixed window.

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1 26. The subsystem of claim 24, the selection of a group of the received data blocks
2 in accordance with a predetermined selection criteria comprising selection of data
3 blocks in a running window.

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27. The subsystem of claim 23, the evaluating of application of the predetermined
compression process according to a predetermined compression criteria comprising:
selecting a group of received data blocks in accordance with a predetermined
selection criteria;
for all received data blocks in the selected group, determining an aggregate
compression ratio between (1) the aggregate size of the data blocks
after application of the predetermined compression process, and (2) the
aggregate size of the data blocks prior to application of the
predetermined compression process, and
determining whether the aggregate compression ratio exceeds a first threshold;
and
if the aggregate compression ratio exceeds the first threshold, the compression
satisfying the predetermined compression criteria.

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1 28. The subsystem of claim 27, the selection of a group of the received data blocks
2 in accordance with a predetermined selection criteria comprising selection of data
3 blocks in a fixed window.

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1 29. The subsystem of claim 27, the selection of a group of the received data blocks
2 in accordance with a predetermined selection criteria comprising selection of data
3 blocks in a running window.

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30. The subsystem of claim 28, wherein:
the predetermined compression process is performed individually to each of
the received data blocks; and
the cessation of application of the predetermined compression process
comprises ceasing application of the predetermined compression
process until satisfaction of a predetermined skip criteria, and then
resuming application of the predetermined compression process.

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31. The subsystem of claim 30, predetermined skip criteria comprising expiration
of a predetermined time.

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32. The subsystem of claim 31, the termination of application of the predetermined
compression process further comprising:
storing data items received during cessation of the predetermined compression
process without compression according to the predetermined
compression process.

33. The subsystem of claim 31, the resumption of application of the predetermined
compression process after satisfaction of a predetermined skip criteria comprising:
resuming application of the predetermined compression process after storage
of a predetermined number of data items without compression
according to the predetermined compression process.

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- 1 34. A data storage subsystem, comprising:
2 storage means to store digital data blocks;
3 storage controller means, coupled to the storage unit, for conducting data
4 compression process by:
5 receiving multiple input data blocks for storage in a data storage
6 subsystem;
7 applying a predetermined compression process to the data blocks;
8 evaluating application of the predetermined compression process
9 according to a predetermined compression criteria; and
10 if the compression fails to satisfy the predetermined compression
11 criteria, ceasing application of the predetermined compression
12 process.
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